Bulk Metallic Glass Gears - Implementation (BMGG-I)

Completed Technology Project (2015 - 2021)

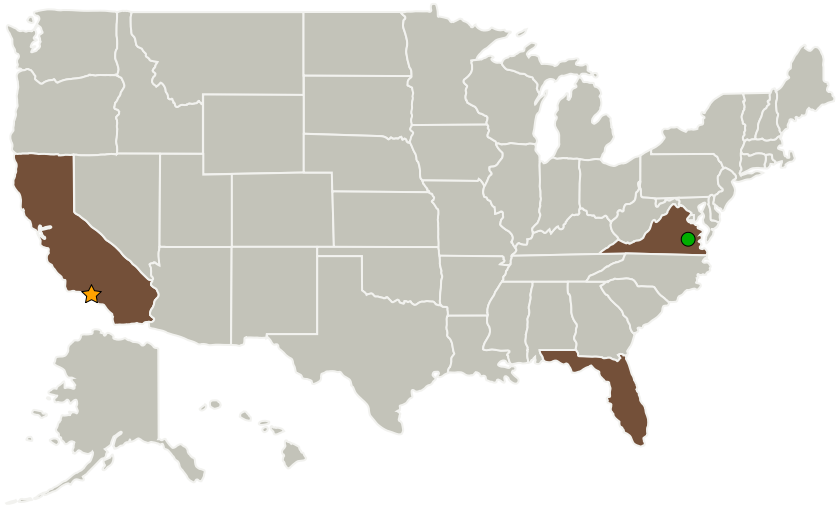
Project Introduction

With NASA's bulk metallic glass alloys we can increase operational capability and accomplish more science in extreme cold environments like permanently shadowed craters on the Moon, the Lunar night, and icy bodies such as Europa. Temperatures in these environments are regularly more than twice as cold as those ever recorded on earth. Spacecraft mechanisms, specifically gearboxes and actuators, made from these materials can operate without power consuming heaters. This allows that power to be used instead for more instruments or extending the life of the mission.

Anticipated Benefits

Heaterless actuators for power constrained missions increased operational capability, increased science return, and extended mission lifetime.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Eutectix	Supporting Organization	Industry	Troy, Michigan
●Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia
Supercool Metals, LLC	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Branford, Connecticut

Co-Funding Partners	Type	Location
Game Changing Development(GCD)	NASA Program	
Kennedy Space Center(KSC)	NASA Center	Kennedy Space Center, Florida
Planetary Science	NASA Program	

Primary U.S. Work Locations	
California	Florida
Virginia	

Project Website:

https://www.nasa.gov/directorates/spacetech/game_changing_development/in

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Game Changing Development

Project Management

Program Director:

Mary J Werkheiser

Program Manager:

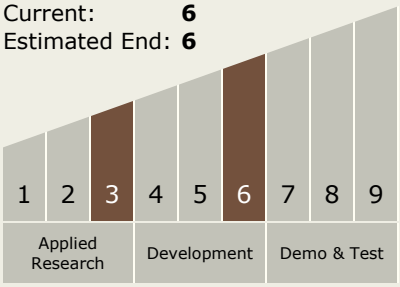
Gary F Meyering

Project Manager:

Robert P Dillon

Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.5 Structural Dynamics

Target Destinations

The Moon, Mars, Others Inside the Solar System

Supported Mission Type

Push